

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
29 December 2004 (29.12.2004)

PCT

(10) International Publication Number
WO 2004/112603 A1

(51) International Patent Classification⁷: **A61B 5/00**

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(21) International Application Number:
PCT/US2004/019971

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(22) International Filing Date: 21 June 2004 (21.06.2004)

(25) Filing Language: English

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.

(26) Publication Language: English

(30) Priority Data:
60/479,937 19 June 2003 (19.06.2003) US

(63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:
US 60/479,937 (CIP)
Filed on 19 June 2003 (19.06.2003)

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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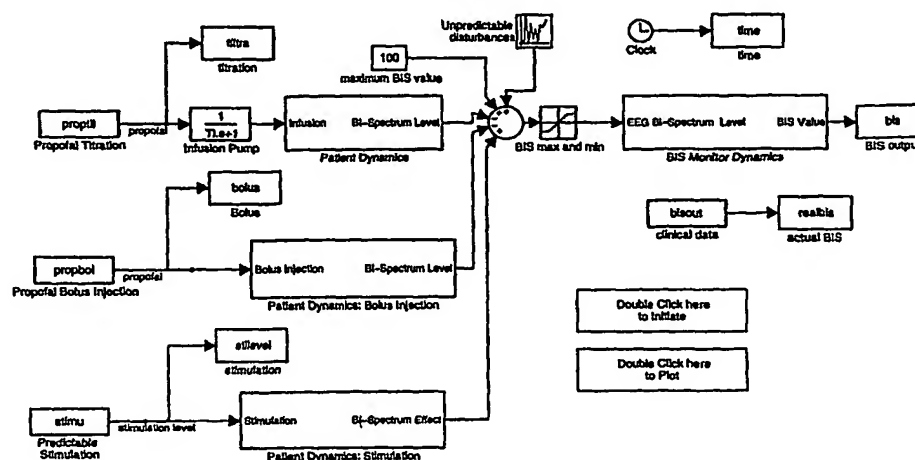
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Published:

— with international search report

[Continued on next page]

(54) Title: SYSTEM FOR IDENTIFYING PATIENT RESPONSE TO ANESTHESIA INFUSION



(57) Abstract: A generic model structure captures basic characteristics in BIS-based patients' responses to anesthesia and surgical stimulation, the model being used in combination with the insight of an anesthesiologist. The model structure represents the patient response with a time delay, a time constant for response speed, and a nonlinear function for drug sensitivity. Clinical data confirms the model structure and is used to establish parameters and function forms for individual patients. A feedback and predictive control strategy for anesthesia drug infusion is then introduced on the basis of the patient model. Feedback control alone cannot avoid large fluctuations in BIS values when significant surgical stimulation is imposed, as a result of time delays in a patient's response to drug infusion. Predictive control attenuates fluctuations of BIS levels from surgical stimulation.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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